

# A review of the West African genus *Saraina* (Araneae, Salticidae)

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## Abstract

The West-African genus *Saraina* is revised. The type species *Saraina rubrofasciata* Wanless & Clark, 1975 is redescribed based on its type material. Earlier records of *S. rubrofasciata* from Congo turned out to belong to two new species: viz., *S. deltshevi* sp. n. (♂) and *S. kindamba* sp. n. (♂♀). A key to the males of the known species is provided.

## Keywords

Salticidae, *Saraina*, new species, Ivory Coast, Congo

## Introduction

The monotypic genus *Saraina* from Ivory Coast was established by Wanless and Clark (1975) for *Saraina rubrofasciata* Wanless & Clark, 1975 known from females only. Later, Szűts and Scharff (2005) described the male of *S. rubrofasciata* from the Republic of Congo, and this has remained the only record of the genus since its original description. Recently, I was privileged to re-examine both the type specimens and those of Szűts and Scharff (with the exception of one male and

female supposedly kept in the Wrocław University, but seemingly lost), together with new collections of *Saraina* from Ivory Coast and the Democratic Republic of Congo kept in the Musée Royal de l'Afrique Centrale Tervuren. Among these I have found additional male and female specimens of *S. rubrofasciata* collected from Ivory Coast. The specimens examined by Szűts and Scharff (2005) from the Republic of Congo and the Democratic Republic of Congo turned out to belong to two new species: namely, *S. deltshevi* sp. n. (♂) and *S. kindamba* sp. n. (♂♀). Thus, the genus *Saraina* currently comprises three species.

## Material and methods

This work is based on the salticid collections held at the Musée Royal de l'Afrique Centrale, Tervuren (indicated as MRAC in the text, Dr R. Jocqué) and the Hungarian Natural History Museum, Budapest (HNHM, Dr. L. Dányi). The specimens were examined in ethanol and descriptions of colours refer to specimens in this medium. The drawings were made with the aid of a reticular eyepiece attached to a MBS-10 stereomicroscope. The male pedipalps and the epigynes were detached for study. Epigynes were macerated in 20% KOH solution for one night. After being drawn, the copulatory organs were placed in microvials or small pieces of paper with ethanol together with the specimens from which they had been removed.

All drawings were edited with Adobe Photoshop. Figures 2-4 and 7-8 for the right palp of the holotype were mirrored because for other species left palps have been illustrated. Abbreviations used in the text: AME – anterior median eyes, PME – posterior median eyes, PLE – posterior lateral eyes, Fm – femur, Pt – patella, Ti – tibia, Mt – metatarsus. The sequence of leg segments in the measurement data is as follows: femur + patella + tibia + metatarsus + tarsus. All measurements are in millimetres. Leg spination follows the system used by Ono (1988).

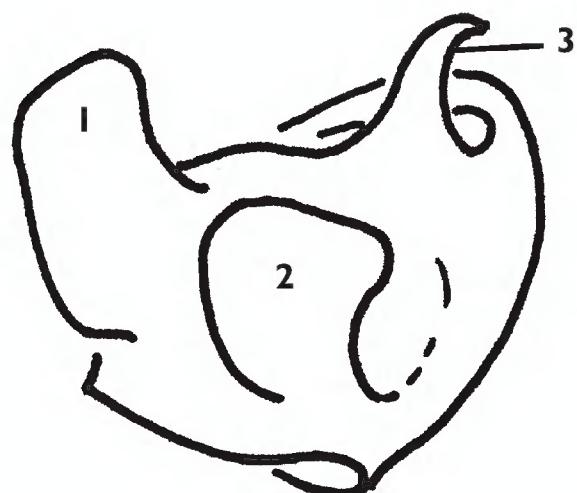
## Taxonomy

### Genus *Saraina* Wanless & Clark, 1975

Type species: *Saraina rubrofasciata* Wanless & Clark, 1975

**Diagnosis.** This genus can be recognized by the shape of the copulatory organs: a counterclockwise tegulum and embolus originating on the prolateral side of tegulum (Figs 2, 9, 19, and fig. 5 G in Szűts and Scharff 2005) in males, and an epigyne with two lateral narrow openings, two bent sclerotized structures (Figs 16, 24, 25) and a long, coiled insemination duct (Figs 17, 26) in females.

*Saraina* is a fissidentate genus. The structure of the male copulatory organs is unique: the tibia has three apophyses – ventral, medial and dorsal (Fig. 1). The whip-



**Figure 1.** Palpal tibia, retrolateral view: **1** ventral apophysis, **2** medial apophysis; **3** dorsal apophysis.

liked embolus is long and thin, originating from the prolateral side, and directed inwards of the cymbium (Szűts and Scharff 2005). The relationships of this genus to other salticid genera are unclear (see Wanless and Clark 1975; Dippenaar-Schoeman and Jocqué 1997). The cheliceral base in both sexes and the female copulatory organs in *Saraina* resemble those of some Euophryinae (see also Wanless and Clark 1975, pp. 288-289), while the male copulatory organs are more similar to those of some Thiodininae.

#### Key to species (males only)

- 1 Cymbium with wide and flat apical part (Figs 2-4), medial tibial apophysis without dorsal bump (Fig. 7, arrowed) ..... *S. deltshevi*
- Apical part of cymbium otherwise (Figs 9-11, 19-21), medial tibial apophysis with dorsal bump (Figs 12, 23, arrowed) ..... **2**
- 2 Ventral tibial apophysis short (Fig 9, arrow 1), medial tibial apophysis long and narrow in ventral view (Fig. 9, arrow 2), retrolateral bump of tegulum convex in dorsal view (Fig. 11, arrow) ..... *S. kindamba*
- Ventral tibial apophysis long (Fig. 19, arrow 1), medial tibial apophysis short and broad in ventral view (Fig. 19, arrow 2), retrolateral bump of tegulum concave in dorsal view (Fig. 21, arrow) ..... *S. rubrofasciata*

#### *Saraina deltshevi* sp. n.

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Figs 2-8

*S. rubrofasciata*: Szűts and Scharff 2005 [pro parte]: p. 368 (D♂; misidentified).

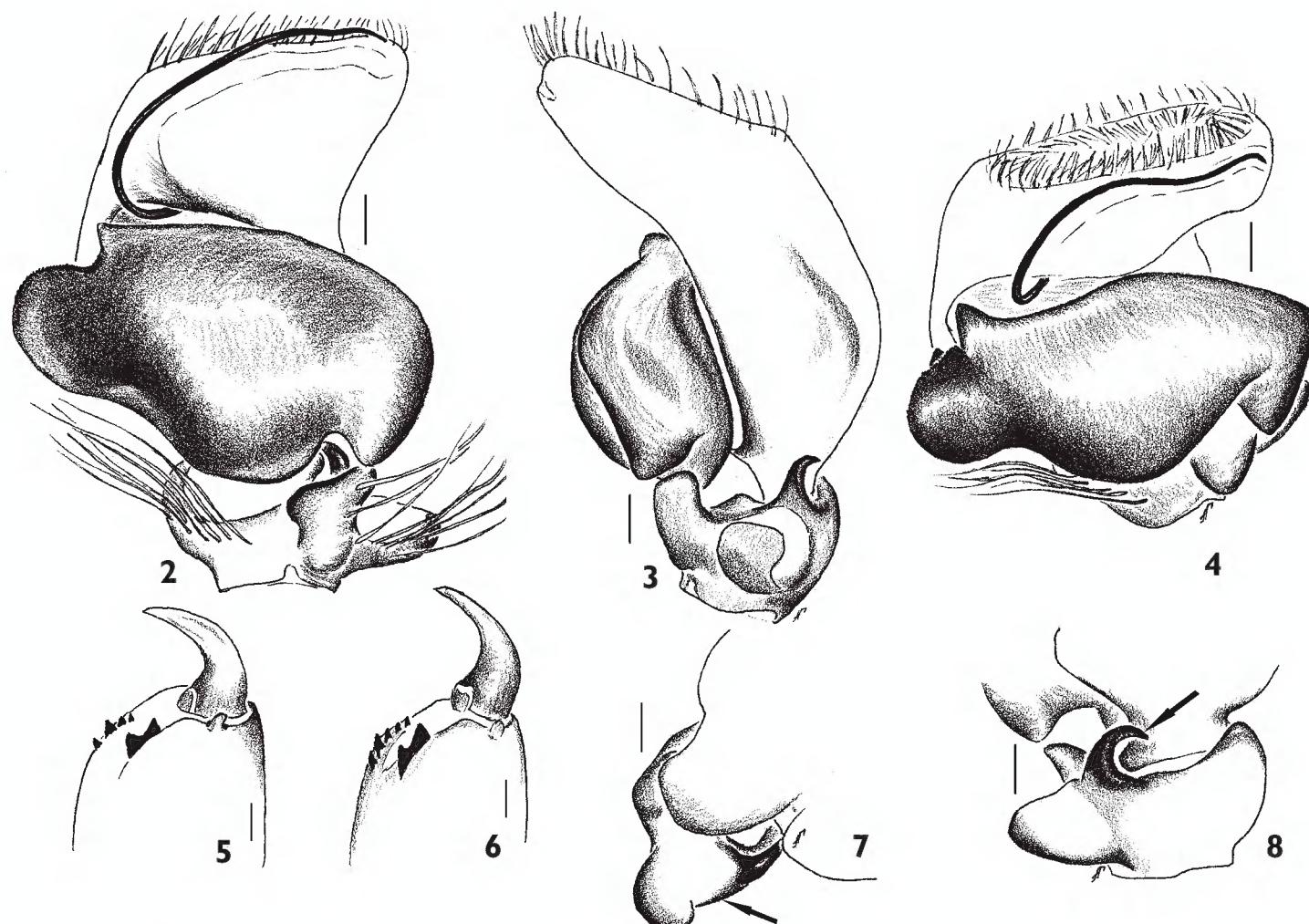
**Type material.** Holotype ♂, DEMOCRATIC REPUBLIC OF CONGO, Luki Biosphere Reserve, primary forest, end of dry season, fogging (fog 18), 5°37'S, 13°05'E,

1.X.2007, D. De Bakker and J.-P. Michiels (MRAC 227854). Paratypes: 1♂, REPUBLIC OF CONGO, Kindamba, Méya, Loulo river, 3°53'S, 14°31'E, HSZE Nr. 160, netted and singled material from low vegetation, 11.XI.1963, J. Balogh and A. Zicsi (HNHM Araneae-685).

**Diagnosis.** Males can be easily separated from *S. rubrofasciata* and *S. kindamba* by the stronger dorsal tibial apophysis bending dorsad (Fig. 8, arrow) and by the medial tibial apophysis without a dorsal bump (Fig. 7, arrow).

**Etymology.** The species is named after Prof. Christo Deltchev, the well-known Bulgarian arachnologist, on the occasion of his 70th anniversary.

**Description.** Male: Measurements: Cephalothorax: length 2.60, width 2.00, height at PLE 1.40. Ocular area: length 1.40, width anteriorly 1.90, width posteriorly 1.80. Abdomen: length 2.40, width 1.55. Clypeal height: 0.15. Cheliceral length: 0.80. Diameter of AME: 0.55. Length of leg segments: I: 1.40+0.70+1.00+1.05+0.55. II: 1.60+0.70+1.05+1.05+0.65. III: 1.75+0.70+1.20+1.50+0.60. IV: 1.90+0.80+1.40+1.50+0.70. Leg spination: I: Fm d 1-2-5; Pt pr & rt 1; Ti pr & rt 1-1-1, v 2-2-0-2 ap; Mt pr 1-1, rt 2-1 ap; v 2-0-2 ap. II: Fm d 1-2-5; Pt pr & rt 1; Ti d 1-0-0, pr & rt 1-1-1, v 2-2-0-2 ap; Mt pr 1-1-1, rt 1-1 ap; v 2-0-2 ap. III: Fm d 1-3-5; Pt pr & rt 1; Ti d 1-0-0, pr & rt 1-1-1, v 2-0-2 ap; Mt pr 1-0-2 ap, rt 1-1-2 ap; v 2-0-2 ap. IV: Fm d 1-2-5; Pt pr & rt 1; Ti d 1-0-0, pr & rt 1-1-1, v 2-0-2 ap; Mt pr 1-0-2 ap, rt 1-1-2 ap or pr& rt 1-1-2 ap, v 1-1-2 ap. Colouration: Similar



**Figures 2-8.** *Saraina deltshevi*, sp. n.: **2** right palp, ventral view **3** ditto, retrolateral view **4** ditto, ventroapical view **5** left chelicera, holotype **6** left chelicera, paratype **7** palpal tibia, retrolateroapical view **8** ditto, dorsal view. Scale = 0.1 mm.

to that of *Saraina rubrofasciata* but body is darker. Chelicerae with 5 (holotype Fig. 5) or 4 (paratype Fig. 6) promarginal teeth. Palpal structure as in Figs 2-4, 7-8.

**Distribution.** Known from the Democratic Republic of Congo and Republic of Congo.

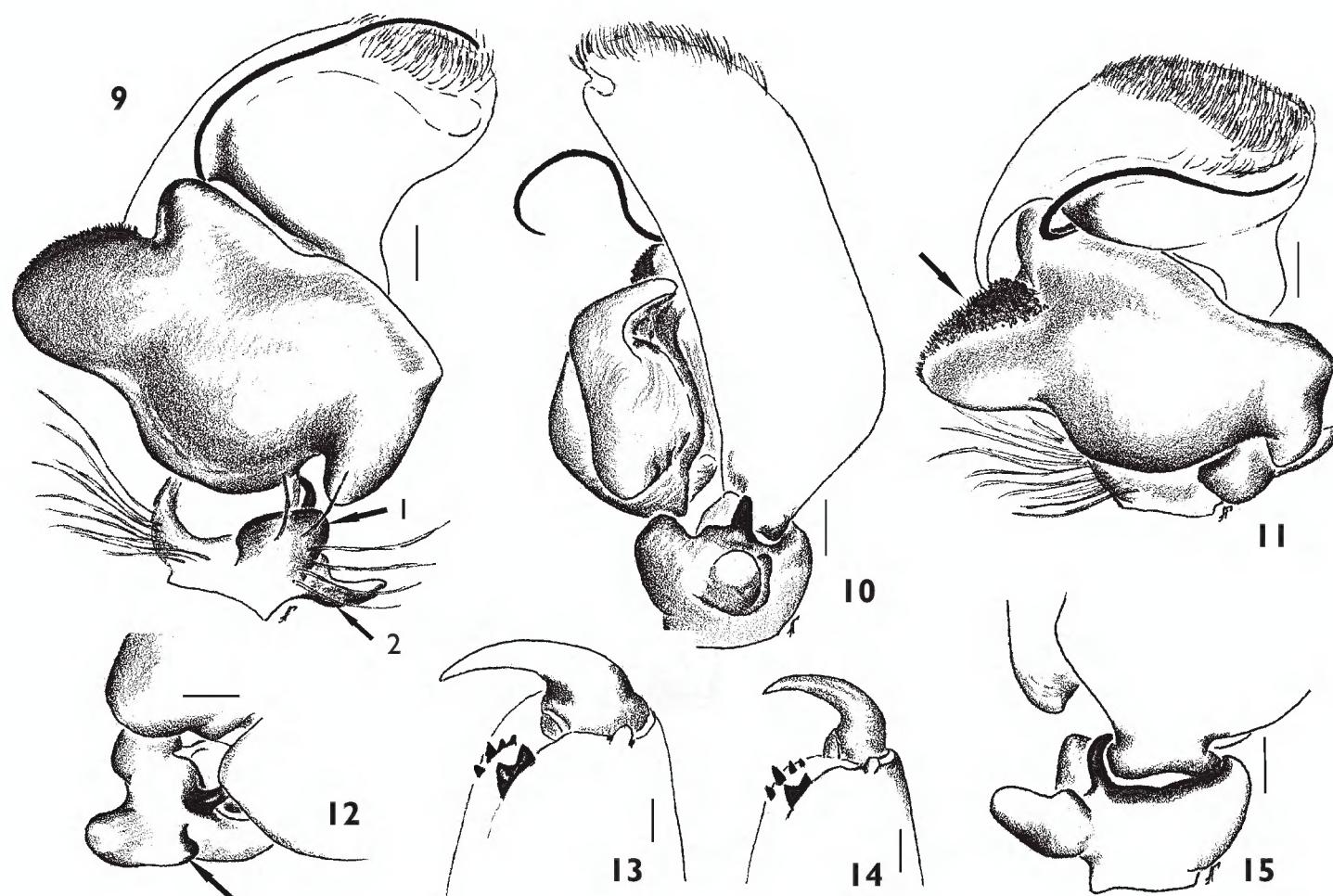
***Saraina kindamba* sp.n.**

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Figs 9-18

*Saraina rubrofasciata*: Szüts and Scharff 2005: 368, f. 5A-G, 6A-C (f, Dm - misidentified).

**Type material.** Holotype: ♂, REPUBLIC OF CONGO, Kindamba, Méya 46, 3°53'S, 14°31'E, 30.X.1963, J. Balogh (HNHM Araneae-683). Paratypes: REPUBLIC OF CONGO: 1♂, Lefini Reserve, Nambouli River, HSZE Nr. 660, beaten from vegetation, 2°55'S, 15°39'E, 12.I.1964, J. Balogh and A. Zicsi (HNHM Araneae-682); 2♂, Brazzaville, ORSTOM Park, beaten from trees and shrubs of park, mostly from border of woods, 4°16'S, 15°17'E, J. Balogh and A. Zicsi (HNHM Araneae-686); 1♀, Kindamba, Méya, 3°53'S, 14°31'E, 129 méyai barlang pitfall traps, J. Balogh (HNHM Araneae-684).



**Figures 9-15.** *Saraina kindamba*, sp. n.: **9** left palp, ventral view **10** ditto, retrolateral view **11** ditto, ventroapical view **12** palpal tibia, retrolateroapical view **13** left female chelicera **14** left male chelicera **15** palpal tibia, dorsal view. Scale = 0.1 mm.

**Diagnosis.** Males can be easily separated from those of *S. rubrofasciata* by the shorter ventral and the longer medial tibial apophyses (Fig. 9, arrows 1 and 2), and also by the shape of the retrolateral bump of the tegulum, especially in its dorsal part (Fig. 11, arrow). From *S. deltshevi* sp. n., it can be separated by the presence of a dorsal bump on the medial tibial apophysis (Fig. 12, arrow). Females can easily be distinguished from *S. rubrofasciata* by the longer insemination ducts (Fig. 17).

**Etymology.** The species is named after the type locality of the holotype, Kindamba, Republic of Congo. Noun in apposition.

**Description.** Male: Measurements: Cephalothorax: length 2.30, width 1.80, height at PLE 1.35. Ocular area: length 1.30, width anteriorly 1.80, width posteriorly 1.65. Abdomen: length 2.50, width 1.70. Clypeal height: 0.10. Cheliceral length: 0.60. Diameter of AME: 0.55. Length of leg segments: I: 1.45+0.70+1.00+0.90+0.60. II: 1.65+0.70+0.80+1.00+0.60. III: 1.60+0.80+1.00+1.20+0.65. IV: 1.70+0.60+1.15+1.35+0.65. Leg spination: I: Fm d 1-2-5; Pt pr & rt 1; Ti pr & rt 1-2, v 2-2-0-2 ap; Mt pr 1-1, rt 2-1 ap; v 2-0-2 ap. II: Fm d 1-2-5; Pt pr & rt 1; Ti d 1-0-0, pr & rt 1-1-1, v 2-2-0-2 ap; Mt pr & rt 2-1 ap; v 2-0-2 ap. III: Fm d 1-3-5; Pt pr & rt 1; Ti d 1-0-0, pr & rt 1-1-1, v 2-0-2 ap; Mt pr 1-0-2 ap, rt 1-1-2 ap; v 2-0-2 ap. IV: Fm d 1-2-5; Pt pr & rt 1; Ti d 1-0-0, pr & rt 1-1-1, v 2-0-2 ap; Mt pr & rt 1-1-2 ap, v 1-1-2 ap. Colouration: similar to that of *S. rubrofasciata*. Chelicerae with 4 teeth with one exception – left chelicerae of holotype with 5 promarginal teeth, right with 4 promarginal teeth (Fig. 14). Palpal structure as in Figs 9-12, 15.

Female: Measurements: Cephalothorax: length 3.00, width 2.30, height at PLE 1.50. Ocular area: length 1.40, width anteriorly 2.00, width posteriorly 1.80. Abdomen: length 4.50, width 3.10. Clypeal height: 0.10. Cheliceral length: 0.90. Diameter of AME: 0.65. Length of leg segments: I: 1.55+0.90+1.10+1.05+0.60. II: 1.65+0.80+1.00+1.00+0.55. III: 1.70+0.90+1.20+1.30+0.70. IV: 2.00+1.00+1.40+1.60+0.70. Leg spination: I: Fm d 1-2-5; Pt pr & rt 1; Ti pr & rt 1-2, v 2-2-0-2 ap; Mt pr 1-1, rt 2-1 ap; v 2-0-2 ap. II: Fm d 1-3-5; Pt pr & rt 1; Ti pr & rt 1-2, v 2-2-0-2 ap; Mt pr & rt 1-1 ap; v 2-0-2 ap. III: Fm d 1-3-5; Pt pr & rt 1; Ti pr & rt 1-1-1, v 1-0-2 ap; Mt pr 1-0-2 ap, rt 1-1-2 ap; v 2-0-2 ap. IV: Fm d 1-2-5; Pt pr & rt 1; Ti pr & rt 1-1-1, v 2-0-2 ap; Mt pr & rt 1-1-2 ap, v 1-1-2 ap. Colouration: as in the male. Chelicerae with 4 promarginal teeth (Fig. 13). Structure of epigyne and spermathecae as in Figs 16-18 (compare with Fig. 6, A-C in Szüts and Scharff 2005 which looks quite different).

**Distribution.** Known only from the Republic of Congo.

**Remarks.** The material from the Kindamba locality (Republic of Congo) contains three samples – two males from different species and a single female. It has been difficult to decide which species the female belong to, as the body colouration of all three species is very similar. I have provisionally assigned it to *S. kindamba* sp. n. More material of both sexes is needed to resolve this problem in the future.

***Saraina rubrofasciata* Wanless & Clark, 1975**

Figs 19-29

*S. rubrofasciata* Wanless and Clark, 1975: 289, f. 23-26 (Df).

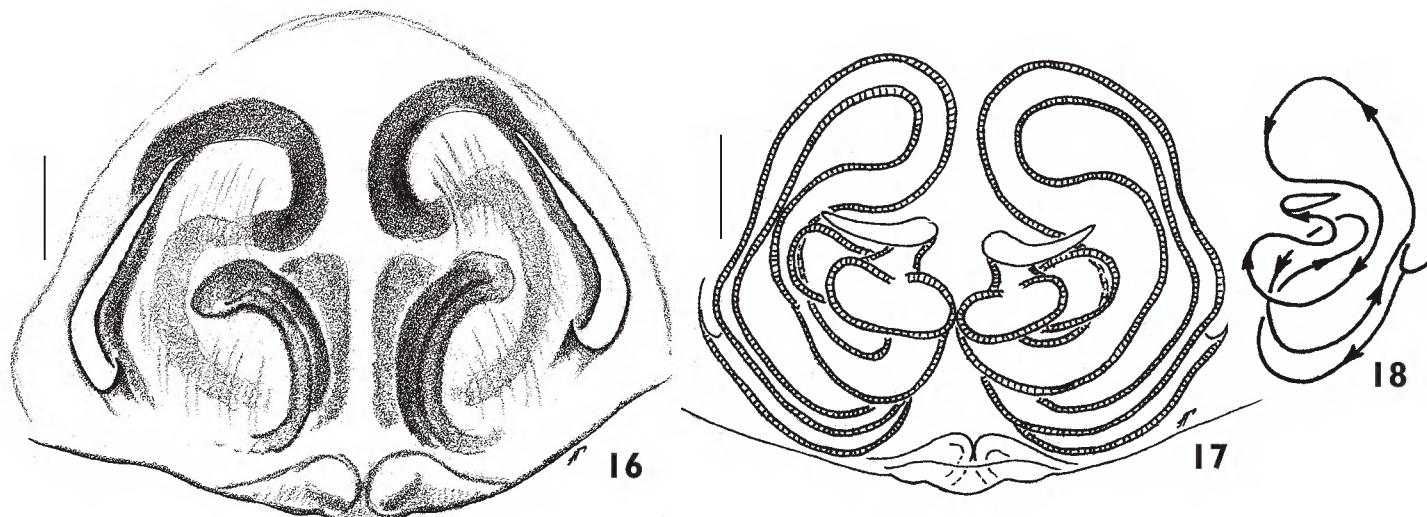
**Type material.** Holotype: ♀, IVORY COAST, Bingerville, 5°21'N, 3°53'W, I.1964, J. Decelle (MRAC 126105).

**Other material examined.** IVORY COAST: 1♂, Bingerville, 5°21'N, 3°53'W, I.1964, J. Decelle (MRAC 126108), 1♀, Appouesso, FC Bossematié, 4°16'S, 15°17'E, forest, pitfall, station 1D, 29.I.1995, R. Jocqué and Tanoh (MRAC 203686).

**Diagnosis.** Males can be easily separated from those of *S. deltshevi* by the presence of a dorsal bump on the medial tibial apophysis (Fig. 23, arrowed). From *S. kindamba*, they can be distinguished by the longer ventral and shorter medial tibial apophysis (Fig. 19, arrows 1 and 2), also by the shape of the retrolateral bump of the tegulum, especially on its dorsal part (Fig. 21, arrow). The females differ from those of *S. kindamba* in having shorter insemination ducts (Fig. 26).

**Description.** Male: Measurements: Cephalothorax: length 2.40, width 1.90, height at PLE 1.45. Ocular area: length 1.30, width anteriorly 1.90, width posteriorly 1.75. Abdomen: length 2.30, width 1.45. Clypeal height: 0.15. Cheliceral length: 0.60. Diameter of AME: 0.60. Length of leg segments: I: 1.40+0.60+0.85+0.80+0.55. II: 1.50+0.70+0.90+0.90+0.55. III: 1.55+0.60+1.10+1.05+0.65. IV: 1.75+0.75+1.10+1.25+0.75. Leg spination: I: Fm d 1-2-5; Pt pr & rt 1; Ti pr & rt 1-1-1, v 2-2-0-2 ap; Mt pr & rt 1-1 ap; v 2-0-2 ap. II: Fm d 1-3-5; Pt pr & rt 1; Ti d 1-0-0, pr & rt 1-1-1, v 2-2-0-2 ap; Mt pr 1-1 ap, rt 2-1 ap; v 2-0-2 ap. III: Fm d 1-3-5; Pt pr & rt 1; Ti d 1-0-0, pr & rt 1-1-1, v 2-0-2 ap; Mt pr 1-0-2 ap, rt 1-1-2 ap; v 2-0-2 ap. IV: Fm d 1-2-5; Pt pr & rt 1; Ti d 1-0-0, pr & rt 1-1-1, v 2-0-2 ap; Mt pr & rt 1-1-2 ap, v 2-0-2 ap.

Colouration: Carapace dark brown with brownish yellow medial stripe and black patches around the eyes covered with white hairs. Sternum brownish yellow. Clypeus

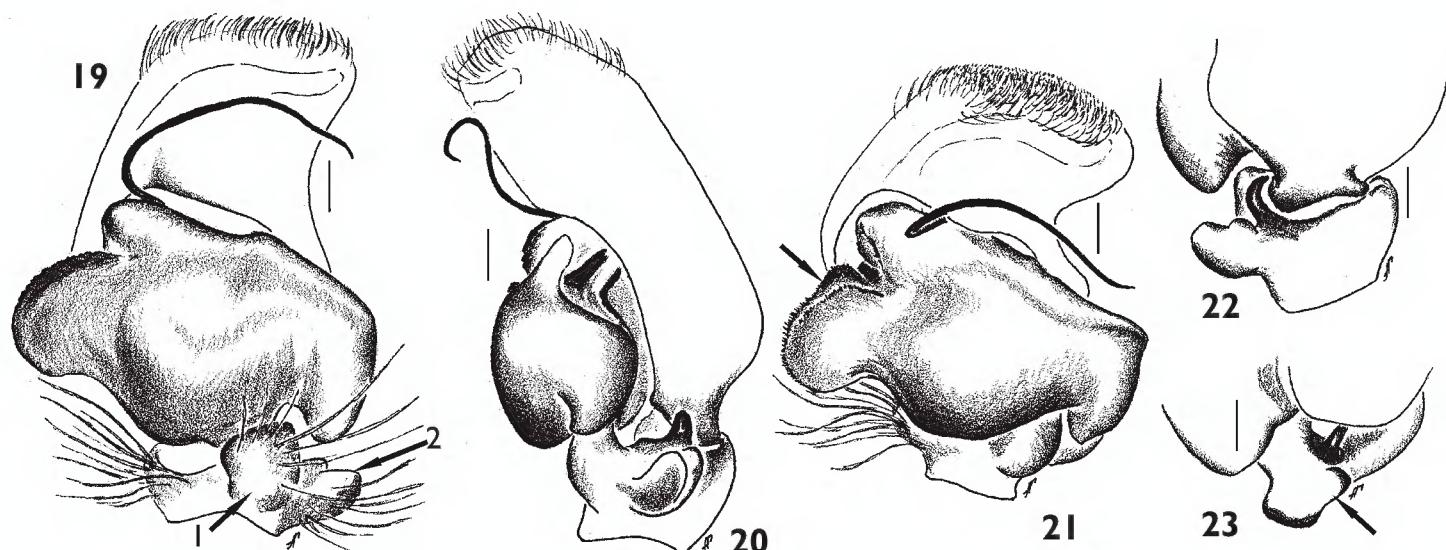


**Figures 16-18.** *Saraina kindamba*, sp. n.: 16 epigyne, ventral view 17 spermathecae, dorsal view 18 scheme of insemination ducts. Scale = 0.1 mm.

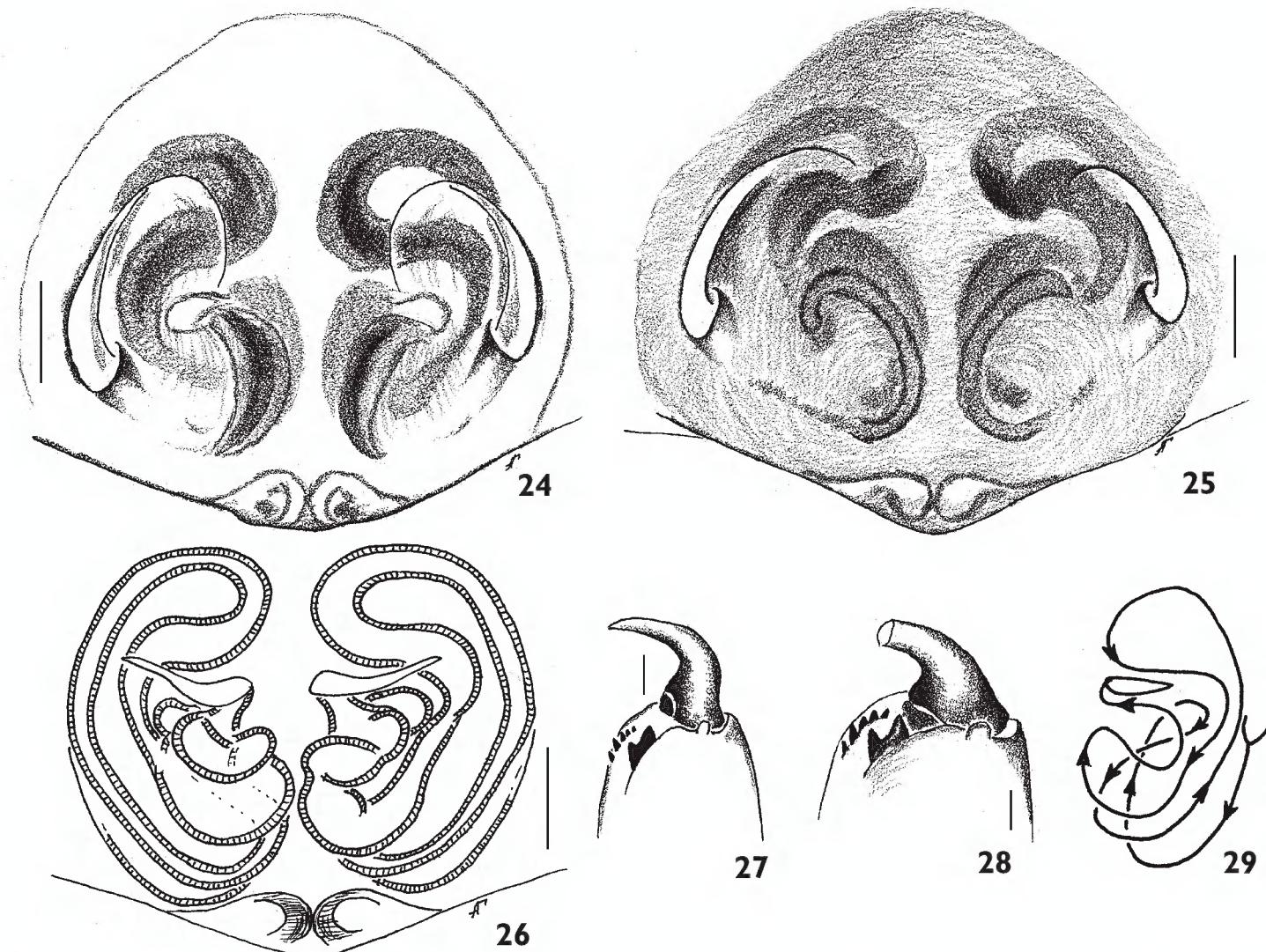
and cheeks yellow, chelicerae brown. Chelicerae with 5 promarginal teeth (Fig. 27). Abdomen grey-yellow. Ventral part grey-brown. Dorsum brownish yellow or yellow covered with white hairs, with medial and two lateral brown stripes. Book lungs covers grey-yellow, spinnerets brownish yellow. All legs yellow with brown bands. Palps yellow covered with white hairs. Palpal structure as in Figs 19-23.

Female: Measurements: Cephalothorax: length 2.80, width 2.20, height at PLE 1.65. Ocular area: length 1.35, width anteriorly 2.05, width posteriorly 2.00. Abdomen: length 2.90, width 2.00. Clypeal height: 0.15. Cheliceral length: 1.15. Diameter of AME: 0.60. Length of leg segments: I: 1.50+0.95+0.95+0.90+0.55. II: 1.55+0.90+1.00+0.95+0.55. III: 1.70+0.80+1.00+1.00+0.65. IV: 1.90+0.90+1.35+1.50+0.75. Leg spination: I: Fm d 1-2-5; Pt pr & rt 1; Ti pr 1-2, rt 1-0-1, v 2-2-0-2 ap; Mt pr 1-1, rt 2-1 ap; v 2-0-2 ap. II: Fm d 1-2-5; Pt pr & rt 1; Ti pr & rt 1-1-1, v 2-2-0-2 ap; Mt pr 1-1 ap, rt 1-1-1 ap; v 2-0-2 ap. III: Fm d 1-3-5; Pt pr & rt 1; Ti pr & rt 1-1-1, v 1-0-2 ap; Mt pr 1-0-2 ap, rt 1-1-2 ap; v 2-0-2 ap. IV: Fm d 1-2-5; Pt pr & rt 1; Ti pr & rt 1-1-1, v 1-0-2 ap; Mt pr & rt 1-1-2 ap, v 2-0-2 ap. Colouration: Carapace dark brown with brownish yellow medial stripe and black patches around eyes covered with white hairs. Sternum yellow or brown. Clypeus and cheeks yellow or brown. Chelicerae brown or dark brown. Chelicerae with 5 promarginal teeth (Fig. 28). Abdomen yellow-grey. Ventral part grey-brown. Dorsum brown covered with dense white hairs, with three orange stripes same position with male (holotype in poor condition, without orange hairs on stripes because of this). Posterior part with five pairs of orange points located between medial and lateral stripes. Book lungs covers yellow-grey. Spinnerets brownish yellow. All legs yellow or brownish yellow with indistinct brown bands. Palps yellow or brownish yellow covered with white hairs. Structure of epigyne and spermathecae as in Figs 24-26, 29.

**Distribution.** Known from Ivory Coast, Cameroon and Nigeria (Wanless and Clark 1975; present data).



**Figures 19-23.** *Sarina rubrofasciata*: **19** left palpus, ventral view **20** ditto, retrolateral view **21** ditto, ventroapical view **22** palpal tibia, dorsal view **23** ditto, retrolateroapical view. Scale = 0.1 mm.



**Figures 24-29.** *Saraina rubrofasciata*: **24** epigyne, ventral view, holotype **25** epigyne, ventral view **26** spermathecae, dorsal view **27** left male chelicera **28** left female chelicera **29** scheme of insemination ducts. Scale = 0.1 mm.

## Acknowledgements

I wish to thank Dr Rudy Jocqué (Musée Royal de l'Afrique Centrale, Tervuren, Belgium) and Dr László Dányi (Hungarian Natural History Museum, Budapest, Hungary) for providing specimens of *Saraina* for this study. Special thanks to Dr Anthony Russell-Smith (Sittingbourne, UK) who provided linguistic help, to Domir De Bakker and Myriam Vandenbosch (both from the Musée Royal de l'Afrique Centrale Tervuren, Belgium) who helped me during preparation of this paper. Finally, many thanks to the two anonymous referees, with whose help the manuscript was significantly improved.

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